

PLEASE AMEND THE CLAIMS AS FOLLOWS:

20. (AMENDED) A metal structure on a semiconductor substrate, comprising:

a via hole in an insulator layer exposing a portion of an underlying lower level metal interconnect structure

5 a recessed metal plug structure located in a bottom portion of said via hole, with
said recessed metal plug structure overlying and contacting the portion of said lower
level metal interconnect structure exposed in said via hole; and

10 said metal structure comprised with a first portion located on a smooth top surface
of said insulator layer situated only adjacent to one side of said via hole, and with said
metal structure comprised with a second portion attached to said first portion of said
metal structure, wherein said second portion is a metal ring structure comprised of metal
spacers located on the sides of a top portion of said via hole and located overlying only
first portions of a top surface of said recessed metal plug structure located at the bottom
of said via hole, resulting in a space between said metal spacers exposing a second
portion of said top surface of said recessed metal plug structure.

21. (AMENDED) The metal structure of claim 20, wherein said lower level metal interconnect structure is comprised of a composite metal structure, featuring an aluminum, or an aluminum based layer, at a thickness between about 2000 to 20000 Angstroms, with an underlying titanium nitride layer, at a thickness between about 100 to 1500 Angstroms, and an overlying titanium nitride layer, at a thickness between about 100 to 1500 Angstroms.

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22.(AMENDED) The metal structure of claim 20, wherein said via hole is comprised with a diameter between about 0.10 to 1.0 um.

23. (AMENDED) The metal structure of claim 20, wherein said recessed metal plug structure, is comprised of tungsten, with the height of said recessed metal plug structure, located in said bottom portion of said via hole, between about 3000 to 20000 Angstroms.

24. (AMENDED) The metal structure of claim 20, wherein said metal ring structure, attached to said first portion of said metal structure is comprised of aluminum, or aluminum - copper spacers, located on the sides of said top portion of said via hole.